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ABSTRACT

A study sought to create and pilot a reasonable method for estimating reading rate by grade level and level of reading proficiency within grade level, and to identify reasonable estimates of reading rate at independent, instructional, and frustration levels of reading. Data were elicited from 66 third grade and 64 fifth grade students attending two different public schools, one inner city and one suburban. Subjects were asked to read orally a passage of approximately 500 words taken from a social studies text one year above their grade placement. Results revealed that the correlation between reading rate and accuracy was positive and moderately high at both grade levels. Readers who had good word recognition tended to read at faster rates. The principal finding was that word recognition accuracy, a key factor in determining independent, instructional, and frustration reading levels, was successfully used in predicting reading rates for grades three and five. Findings suggest that researchers can determine reading rates that correspond to levels of difficulty for all grade levels. (One table of data is included; 18 references are attached.) (KEH)

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Predicting Reading Rates that Correspond to Independent, Instructional, and Frustration Reading Levels for Third and Fifth Grade Students

Informal reading inventories (IRIs) have received wide acceptance among reading teachers and clinicians and are generally recognized as valuable instruments in the assessment of reading (Johns, 1988). Part of the reason behind the popularity of IRIs is that the analysis of oral reading errors, which is central to IRI assessments, is high in ecological validity and permits a process as well as a product view of reading (Leu, 1982). Moreover, IRIs allow teachers and researchers to assess several important factors associated with reading proficiency. Among these are word recognition accuracy, reliance on context in word recognition, and various types of comprehension.

Reading rate is viewed by many as a measure of reading fluency (Rasinski, 1989; Samuels, 1979) and research has demonstrated that reading rate is a good predictor of general reading achievement (Rasinski, 1985). Indeed, Adams (1990) argues that proficient reading is largely dependent on the readers' speed an completeness in identifying wordss from print. Nevertheless, reading fluency is an aspect of reading that is often neglected in reading instruction (Allington, 1983; Anderson, 1981). Moreover, despite the fact that reading rate of whole texts can easily be assessed using IRI methodology, the assessment of reading rate in informal reading inventories is often seen as an unnecessary aspect of the total evaluation.

Despite the theoretical and pragmatic arguments for using reading rate as part of a battery of IRI derived measures in developing assessment profiles of readers, many clinicians and teachers choose not to include an assessment of rate in their diagnostic procedures. It appears that two principle reasons underlie this decision. First, inasmuch as fluency in reading is not generally viewed as an important dimension of overall reading proficiency, it follows that measures of fluency (i.e. reading rate) are similarly neglected. Second, and perhaps of equal significance, teachers who administer IRIs do not have a consistent set of standards against which to assess readers' observed rate of reading. Great variation exists in the recommended rates for readers at different grade levels and under different reading conditions. For example, Stroud and Henderson (1943) found that "average" fifth grade readers reading grade level material exhibit a rate between 181 to 185 words per minute (wpm). Durrell (1955) found that fifth-graders read orally at 150 words per minute and silently at 180 wpm. Taylor (1965) found a 173 wpm rate to be associated with reading with comprehension for fifth grade students. Gilmore and Gilmore (1968), on the other hand, state that average fifth-grade rate performance ranges from 108 to 140 wpm. Harris and Sipay (1985) identify the median rate for fifth-graders on standardized reading tests at 177 wpm. McCracken (1970) provides minimum rate estimates for both oral and silent reading and sets these at 120 and 170 wpm respectively.

Thus, even within the average range of performance at one grade level the range of estimates of average reading rate exceed 70 wpm.

Carver (1989) has attempted to specify reading rates that correspond to typical reading for grades one through college. The rates presented, however, reflect silent reading.

In addition to the problem of variation in rates per grade level, previously determined reading rates do not specify rates for various levels of reading performance within a grade level, namely independent, instructional, and frustration reading levels. The Carver (1989) grade equivalent rates do not differentiate by the level of reading exhibited by the reader. In IRIs these levels provide thresholds for gauging student performance in word recognition and comprehension. At present, reading rate criteria offer no such thresholds for delineation of performance.

The purpose of the present study, then, was to pilot a reasonable method for estimating reading rate by grade level and level of reading proficiency within grade level, and to identify reasonable estimates of reading rate at independent, instruction, and frustration levels of reading for third and fifth-grade readers. Such information should be of great help to reading diagnosticians (especially users of informal reading inventories) in assessing reading fluency and making more enhanced overall assessments of

general reading performance.

Method

Subjects - Sixty-six third-grade students and 64 fifth-grade students participated in the study. Students came from two public schools, one located in the inner-city section of a large urban area, the other located in a suburban section of the same general area. None of the students were diagnosed as having any significant learning disorder (e.g. Learning Disabled, Attention Deficit Disorder) and all were receiving reading instruction from their classroom teacher in the regular school reading curriculum.

Procedures - Each student was asked, on an individual basis, to read orally a passage of approximately 500 words taken from a social studies text one year above their grade placement. Students were asked to read as they would normally read in school and were told that they would be asked a set of comprehension questions at the end of the reading. The text read by the third-graders was on the life of Eskimos and the topic of the fifth-grade passage was the ecology of the oceans. The use of an above grade level text was to insure that students would find such a text challenging, thus preventing a ceiling effect in word recognition for better readers. Reading level was operationally defined by the number of oral reading word recognition errors made and student performance ranged from

frustration to independent levels.

From each oral reading, measures of reading rate (words per minute) and accuracy (percentage words recognized correctly) were determined. In determining reading accuracy word substitutions, insertions, omissions, reversals, and words pronounced by the examiner after a prolonged hesitation (count of five) were counted as errors.

Analysis - Means and standard deviations for rate and accuracy were calculated for both grade levels and are reported in Table 1.

[Insert Table 1 about here]

Correlations were run between measures of rate and accuracy for each grade level. Correlations coefficients were .67 at grade three and .57 at grade five. Both correlations were determined to be statistically significant ($p<.001$).

Next, prediction equations were determined, with rate employed as the predicted variable. For grade three the prediction equation was:

[Rate = (3.73 x % of word recognition accuracy) 256.54]

For grade five the prediction equation was:

[Rate = (4.42 x % of word recognition accuracy) 301.94]

Discussion - At both grade levels the correlation between reading rate and accuracy was positive and moderately high. Readers who had good word recognition tended to read at faster rates.

The significance of the prediction equations is that such equations permit estimations of reading rate for various levels of word recognition accuracy. And, since accuracy is used to determine frustration, instruction, and independent reading levels, estimates of rates that correspond to these levels can be calculated. Moreover, since there are no universally accepted criteria for percentages of word recognition accuracy that correspond with the three reading levels (Johns, 1988), the prediction equations permit diagnosticians to determine target reading rates regardless of the word recognition accuracy criteria employed.

For example, Johnson, Kress, and Pikulski (1987) recommend word recognition accuracy rates of 99% or better as a criterion for independent level reading, 95-98% for instructional level, and 90% or less as the criterion for frustration level reading. Employing the prediction equation for grade three on the Johnson, Kress, and Pikulski criteria reveals that a reading rate of 113 w.p.m. or greater would correspond to the independent reading level for third grade students, 98-109 w.p.m. would be indicative of instructional level reading, and rates of 79 w.p.m. or less would be reflective of frustration reading.

If, on the other hand, the word recognition criteria identified by Gillett and Temple (1986) were used (97% or better = independent, 90-96% = instruction, less than 90% = frustration level reading), the reading rates for the three reading levels at third-grade would be 105 wpm or

greater for independent level reading, 79 - 104 wpm for the instructional level, and 75 wpm and below for frustration level reading.

The reading rate estimates for the three reading levels allow reading diagnosticians to go beyond assessing word recognition to gaining a quantitative measure of readers' fluency in reading. When used together, measures of word recognition and fluency may allow for a more sensitive diagnosis of potential reading difficulties. For example, a reader who does poorly in word recognition and fluency (i.e. reading rate) relative to his/her grade placement may need further help in developing accuracy in word recognition. Good word recognition and poor fluency, on the other hand, may suggest that a reader has achieved accuracy in word recognition but needs to work on developing word recognition automaticity (LaBerge & Samuels, 1974; Samuels, 1979) and fluency in which case repeated readings, listening-while-reading, or phrase-cued reading may be implicated. Poor word recognition and a high reading rate could lead to a diagnosis of a lack of visual attention to the text.

Although rate is one general measure of reading fluency, other qualitative measures of fluency do exist. One such measure is a fluency scale developed by Aulls and modified by others (Allington, 1983; Rasinski, 1985). Using a fluency scale, a rater listens to an oral reading and rates it according to the reader's use of phrasing, expression, or other dimension of fluency. Such scales can

easily be used to complement rate in assessments of fluency.

The reading rates for instructional level reading determined through the prediction equations in this study (e.g. 95-98% word recognition accuracy = 98-109 w.p.m. for grade three and 118-131 w.p.m. for grade five) tend to be somewhat lower than several of the rates identified in the related literature for the respective grade levels. This may suggest that the higher rates established in previous work may be indicative of independent level and/or silent reading. For example, the grade equivalent rates presented by Carver (1989) are based on silent reading. The length of the texts used in the study may also have tended to fatigue readers and retard their rates. Reduced reading rates are also suggested by Burge (1983) in his study of fourth-graders' reading rate with some comprehension.

The principle finding of interest from this study is a method for establishing grade level reading rates that correspond to levels of word recognition proficiency oral reading. In the past, grade level rate norms were given without regard to the relative level of difficulty of the text as experienced by individual readers. In the present study, word recognition accuracy, a key factor in determining independent, instruction, and frustration reading levels, was used in predicting reading rates for grades three and five. Using this methodology, researchers can determine reading rates that correspond to levels of difficulty for all grade levels. Such differentiation of rate will allow reading diagnosticians and teachers to make

more sensitive assessments of readers' oral reading fluency using information that is easily obtainable from oral reading performances that are part of the informal reading inventory methodology.

Future work in employing this method is called for using larger samples to verify the results presented in this study. Future work may also be directed at determining prediction equations for other grade levels as well as for silent reading. Nevertheless, the present study presents a novel approach for determining appropriate reading rates for different grade levels and for various levels of reading proficiency within grade levels.

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Table 1

Means and Standard Deviations for

Reading Rate(w.p.m.) and Accuracy

Grade	Rate		Accuracy	
	M	SD	M	SD
3	82.9	28.7	90.9	5.1
5	113.1	28.4	93.9	3.6